

Volcano Instability on the Earth and Other Planets

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Volcano Instability on the Earth and Other Planets

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Preface

This volume addresses the growing interest in destabilized and collapsing volcanoes which followed the spectacular landslide and climatic eruption at Mount St Helens in May 1980. Since this event, edifice collapse has been recognized at numerous volcanoes, both currently active and within the geological record, and the phenomenon is now recognized as constituting a normal occurrence within the life-cycles of all types of volcano.

The curiosity of the scientific community with regard to collapsing volcanoes is far from being purely academic, and is driven also by an awareness that such events constitute volcanogenic hazards of catastrophic potential. In this context, the Mount St Helens collapse can be viewed as a minor event three orders of magnitude smaller, for example, than the giant collapses which have occurred along the flanks of the Hawaiian Island volcanoes during the Quaternary and earlier. The threat posed by such events, both locally and regionally, and in some cases globally, require that a high level of research is maintained into volcano destabilization and structural failure.

This volume contains a collection of 26 papers, which together form a representative cross-section of contemporary research into volcano instability, both on Earth, and other 'terrestrial' bodies in the solar system. Papers have been broadly grouped, with the first two summarising contemporary issues and addressing the development of volcano instability in the Solar System. The following five papers focus upon the different ways in which a volcanic edifice may be destabilized and experience structural failure, while the succeeding four examine instability monitoring and hazard implications. The bulk of the volume (12 papers in all) is devoted to the description and discussion of instability-related processes and products at specific volcanoes or volcanic regions, both submarine, subaerial, and on Mars and Venus, while the final paper examines instabilities within the plumbing system of Stromboli volcano.

The volume stems from a conference that was held in May 1994 to debate and discuss the phenomenon of volcano instability. The conference was jointly convened by the Volcanic Studies Group of the Geological Society and the Joint Association for Geophysics of the Geological and Royal Astronomical Societies. The great success of the conference, and the compilation of this Special Publication reflect the help and support of many people. Specifically, I would like to acknowledge the conscientious contribution of numerous referees who ensured the high quality of the accepted papers, and the hard work of my co-editors Adrian Jones and Jurgen Neuberg. The staff of the Geological Society Publishing House and Burlington House are also sincerely thanked for their contributions. In particular, Sydney Barton is acknowledged for ensuring that the conference ran especially smoothly. Steve Saunders is thanked for demonstrating his projectionist skills, while the contributions of Jane Moss, Ashley Morrell, and Rachel Coninx on the registration desk are also greatly appreciated.

Bill McGuire
Cheltenham, December 1995